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10/593,174	09/15/2006	Robert Donald Grapes	37261P121	8718

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EXAMINER	
BAYOU, AMENE SETEGNE	
ART UNIT	**PAPER NUMBER**
3746	
MAIL DATE	**DELIVERY MODE**
11/14/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/593,174	GRAPES, ROBERT DONALD	
	Examiner	Art Unit	
	AMENE S. BAYOU	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *1,2,8 and 18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-7,9-17 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09/15/2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action.

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 19, 3-10, 12, 13, 15-17, 20, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Behringer et al (US patent number 5902096).

3. In re claim 19, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1),in figure 1 and 2 ,including a housing (10,30,50), a cavity with opposing surfaces (13 and 33) , an inlet port opening (40 or 41) into the cavity, an outlet port opening (42) from the cavity, a pressure port (14) connected to the cavity, a flexible membrane (20) located within the cavity, the flexible membrane (20) being mounted within the housing and a pre-set is applied to the flexible membrane (column 3,lines 33-40) such that the membrane adopts a first stable state (figure 5A) in contact with one of the opposing surfaces (33) of the cavity and can be caused to invert into a second stable state (figure 5C) by the application of pressure to the cavity via the pressure port (14) , the bi-stable membrane (20) thereby being movable between the first (figure 5A) and second (figure 5C) stable states corresponding to completion of inlet and exhaust of a pumping cycle.

4. In re claim 3, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the membrane (20) is formed from an elastomeric material, in figure 1 and column 3, line 45-46.

5. In re claim 4, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the membrane (20) is formed from elastomeric sheet material, in figure 1, 2 and column 3, lines 60-62.

6. In re claim 5, Behringer et al'096 disclose a diaphragm pump including:

- A pump wherein the membrane (20) is damped between first (30) and second (10) sections of the housing each housing section with one of the opposing surfaces (13 and 33) having a cavity section such that when the housing sections are assembled to form the housing, the cavity with opposing surfaces is formed, in figure 2.

7. In re claim 6, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein a pressure port (14) opens into cavity (cavity between 13 and 33), pressure port being (14) connectable to a source or sources of positive and negative pressures, in figure 1 and column 2, lines 61-63.

8. In re claim 7, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) further including a device (2) to cyclically apply the positive and negative pressures to the cavity to cause the membrane (20) to move between the stable states, in figure 1 and column 2,lines 61-63.

9. In re claim 9, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the housing sections (10 and 30) are joined together and to clamp the membrane (20) about a peripheral margin thereof, in figures 1 and 2.

10. In re claim 10, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the first housing section (30) includes a recess (80) into which the membrane (20) is located, the peripheral dimensions of the membrane being greater than those of the recess whereby compressive forces are set up in the membrane when it is installed in the recess to thereby create the preset, in figure 1 and 2 and column 3, lines 30-50.

11. In re claim 12, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) ,in figure 1,further including a third housing section (50) coupled to the second housing section (30) , third housing section including means for facilitating connection of inlet (40) and outlet conduits (43) for pumpable material.

12. In re claim 13, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1), in figure 1, wherein the second (30) and third housing (50) sections include inlet (40, 41) and outlet openings (42, 43) and means for locating therein a valve element (150,151).

13. In re claim 15, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the cavity (cavity between 13 and 33) is elongate and the pressure port (14) is offset in the length of the cavity, in figure 1 and 2.

14. In re claim 16, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the cavity (cavity between 13 and 33) is elongate and of curved cross-section, in figure 1 and 2.

15. In re claim 17, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the ends of the elongate cavity (cavity between 13 and 33) are complex curved, in figure 1 and 2

16. In re claim 20, Behringer et al'096 disclose a diaphragm pump including:

- A pump (1) wherein the clamping of the membrane (20) creates further compressive forces in the membrane, in figure 1 and column 3, lines 30-50.

17. In re claim 21, Behringer et al'096 disclose a diaphragm pump including:

- A cavity with opposing surfaces (13 and 33); inlet and outlet passages (40,41,42) communicating with the cavity ;a pressure port (14) connected to the cavity; and a flexible membrane (20) located within the cavity; wherein the flexible membrane (20): a) has a first stable state (in figure 5C) in contact with one of the opposing surfaces (13) , the first stable state (figure 5C) corresponding to completion of an inlet stage of a pumping cycle (column 5,lines 58-59);b) has a second stable state (in figure 5A) in contact with the other opposing surface (33), the second stable state corresponding to completion of an exhaust stage of a pumping cycle (column 5,lines 39-44 and column 6,lines 7-10); and c) can be caused to invert from one stable state (figure 5A) to the other stable state (figure 5C) by application of positive or negative pressure (column 5,lines 43-49 and column 5,lines 65-67) to the cavity via the pressure port (14) .

Claim Rejections - 35 USC § 103

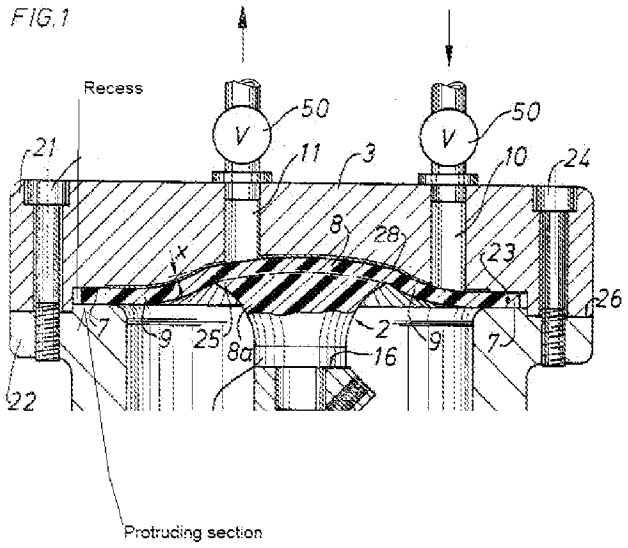
18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. Claim 11, is rejected under 35 U.S.C 103(a) as being unpatentable over Behringer et al'096 as applied to claim 6 in view of Becker (US patent number 3947156).

20. In re claim 11, Behringer et al'096 disclosed the claimed invention including:

- A pump (1), the second housing section (30) which engages in the recess when the first (10) and second housing (30) sections are combined together, to cause the membrane (20) to be clamped in place, in figure 1 and 2. Behringer et al'096 ,However fails to disclose the following limitation which is taught by Becker'156:
- The second housing section (k) includes a protruding portion (as shown below), in figure 1.



21. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the diaphragm pump of Behringer et al'096 by making protrusion in the second housing section as taught by Becker'156 in order to have better clamping capability.

22. Claim 14 is rejected under 35 U.S.C 103(a) as being unpatentable over Behringer et al'096 as applied to claim 13 in view of Dilworth (US patent number 3900276).

23. In re claim 14, Behringer et al'096 disclosed the claimed invention except the following limitation which is taught by Dilworth'276:

- A pump (10) wherein the valve element (74) is a disk of flexible material, in figure 1 and column 5, lines 6-7.

24. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the diaphragm pump of Behringer et al'096 by selecting a flexible disc valve as taught by Becker'156 in order to move the valve easily during opening and closing.

Response to Arguments

25. Applicant's arguments filed September 04 2008 have been fully considered but they are not persuasive. Applicant argues that Behringer et al'096 discloses a membrane which has only one stable state. But the applicant clearly discloses in the specification page 8 paragraphs 1 and 2, the two stable states conform to a completion of intake or exhaust by application of negative or positive pressure. Also the applicant stated in claim 21 that the first stable state corresponds to completion of inlet stage and

the second stable state corresponds to completion of an exhaust stage. Behringer et al'096 clearly defines in figure 5C a first stable state corresponding to completion of intake stage (column 5, lines 58-59) and second stable state corresponds to completion of an exhaust stage (column 5, lines 39-44 and column 6, lines 7-10).Figures 5B and 5D are clearly indicating the temporary state of membrane (20) as it assumes either of this bi stable states.

Conclusion

26. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amene S. Bayou whose telephone number is 571-270-3214. The examiner can normally be reached on Monday-Thursday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746